Computer Science

THE DESIGN AND IMPLEMENTATION OF INTEL HARDWARE VIRTUALIZATION SUPPORT IN THE PALACIOS VIRTUAL MACHINE MONITOR,

A.G. Gocke, J. Lange, P. Dinda*,

Northwestern University, Department of Electrical Engineering and Computer Science, McCormick School of Engineering and Applied Science, Evanston, IL 60201, pdinda@northwestern.edu

A virtual machine monitor (VMM) is an operating system that exports a hardware abstraction and can therefore run other, unmodified operating systems (and their applications) as processes. Hardware virtualization provides significant performance increases while also allowing a virtual machine to meet formal requirements on x86/x86-64 processor architectures. Palacios is an open source, publicly available VMM under development at Northwestern that is in part intended to allow applications to achieve scalable high performance on large machines. Palacios requires that hardware virtualization support in the processor be matched with an implementation that interfaces with the extensions. Initially, Palacios focused on AMD SVM support. I designed and implemented Palacios's support for VT-x, Intel's hardware virtualization architecture. I will describe the high-level implementation of Intel VT-x support in Palacios and a brief comparison between the AMD and Intel Palacios implementations. Palacios can be downloaded from v3vee.org.